

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-224972

(43)Date of publication of application : 17.08.1999

(51)Int.Cl.

H01S 3/18
H01L 33/00

(21)Application number : 10-337197

(71)Applicant : NICHIA CHEM IND LTD

(22)Date of filing : 27.11.1998

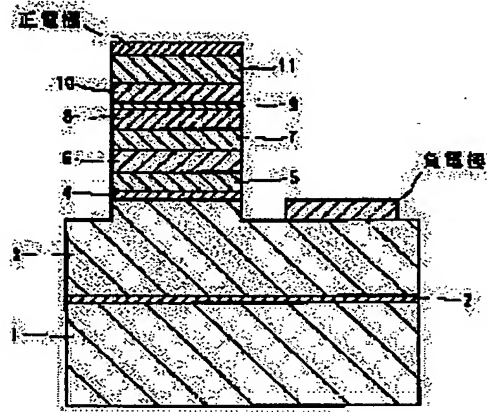
(72)Inventor : NAGAHAMA SHINICHI
IWASA SHIGETO
NAKAMURA SHUJI

(54) NITRIDE SEMICONDUCTOR LIGHT-EMITTING ELEMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To enhance the luminous output of a semiconductor laser by a method, wherein first second and third N-type layers and an active layer having a multiple quantum well structure are laminated on an N-type contact layer, and the laminated material is formed into a double heterostructure.

SOLUTION: A selective etching is performed from a P-type contact layer 11 of a wafer formed into a structure, wherein a buffer layer 2 and a contact layer 3 are grown on the surface of a sapphire substrate 1. A first n-type layer 4 consisting of an n-type InGaN layer, a second N-type layer 5 consisting of an n-type AlGaIn layer, a third n-type layer 6 consisting of an n-type GaN layer, and an active layer 7 consisting of a multiple quantum well structure, are grown on the layer 3 and three layers of p-type nitride semiconductor layers 8, 9 and 10, the p-type contact layer 11 are laminated on the layer 7, the surface of the n-type contact layer 3 is made to expose, and stripped electrodes are respectively formed on the exposed surface of the layer 3 and the surface of the layer 11. The grown layers 3 to 7, the laminated layers 8, 9, 10 and 11 and the electrode on the layer 11 are etched from the direction intersecting orthogonally the layers 3 to 11, the electrode on the layer 11, vertical etched end surfaces are formed to form a reflecting mirror, and the reflecting mirror is used as a resonance surface.



LEGAL STATUS

[Date of request for examination]	27.11.1998
[Date of sending the examiner's decision of rejection]	16.07.2002
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]	
[Date of final disposal for application]	
[Patent number]	3371830
[Date of registration]	22.11.2002
[Number of appeal against examiner's decision of rejection]	2002-15677
[Date of requesting appeal against examiner's decision of rejection]	15.08.2002
[Date of extinction of right]	

Copyright (C); 1998,2003 Japan Patent Office

Best Available Copy

THIS PAGE BLANK (USPTO)

THIS PAGE BLANK (USPTO)